

3. LEVEL OF SERVICE RESULTS

This section of the report describes the results of the surveys of freeway, arterial and ramp-to-ramp segments. Segments that are operating at Level of Service “F” are highlighted as well as segments that have changed significantly since the 2006 survey.

The full listing of peak hour speed and Level of Service results for all CMP network segments is included in the Appendix, on pages A-1 through A-26. The data are subdivided as follows:

- P.M. Freeway Segments, Pages A-1 to A-5
- P.M. Arterial Segments, Pages A-6 to A-12
- P.M. Ramps and Special Segments, Page A-13
- A.M. Freeway Segments, Pages A-14 to A-19
- A.M. Arterial Segments, Pages A-20 to A-25
- A.M. Ramps and Special Segments, Page A-26

In addition to the speed and LOS results, these tables also show the number of lanes on each segment, and the estimated average daily traffic. Each entry also shows the results of the previous study (2006) to provide a comparison. The complete field data, which shows the results of each individual travel time run and other study results, is contained in a CD titled ‘*Technical Compendium of Travel Time Studies – 2008*’, which is available at the ACCMA offices.

P.M. PEAK PERIOD RESULTS

The official monitoring of the Alameda County CMP roadway system is based on the P.M. peak period level of service. Analyzing the County as a whole, the survey results show that the speeds on freeways and arterials appear to have improved since the 2006 surveys. The overall average speeds on the freeway system during the p.m. peak period increased 2.6 miles per hour between 2006 and 2008, while the average arterial speeds increased 1.1 miles per hour. The freeway corridors that are experiencing degradation in service levels are mostly due to construction activity occurring in the county or as a result of splitting longer CMP segments into shorter ones as adopted in the 2007 CMP.

Level of Service “F” Segments – P.M. Peak

Table 4 lists the Level of Service “F” segments that were observed in the 2008 surveys. The surveys revealed that there are 23 freeway segments, 9 arterial segments and 3 freeway to freeway connectors that are operating at LOS F in 2008. Out of the above LOS F segments, 19 out of 23 freeway segments and 4 out of 9 arterial segments are newly created shorter segments. Therefore, these results are not directly comparable to 2006 LOS Monitoring results where 16 freeway segments, 6 arterial segments and 2 freeway to freeway connectors were functioning at LOS F. Of the total 35 p.m. peak LOS F segments in 2008, 12 are operating at LOS F for the first time (9 are new short segments), 13 are grandfathered and the remaining 10 operated at LOS F earlier and are not grandfathered.

Vehicle Hours of Delay (VHD) for LOS F freeway segments

As requested by the CMA Board in 2006, Table 4 also includes vehicle hours of delay for the LOS F freeway segments. Consistent with the Caltrans and MTC definitions, congested speed is assumed to be 35 miles per hour and less and the bottleneck capacity is assumed to be 2,200 vehicles per hour per lane. Since the average speed observed in the LOS Monitoring Study is based on the floating car runs over the 2-hour peak period, for VHD estimation purposes, congestion was assumed to occur only in this 2-hour peak period (Caltrans and MTC measure the actual congestion period by conducting the floating car runs beyond this 2-hour period). The delay per vehicle per lane was calculated by 1) using the difference between how long it takes to travel a CMP LOS F segment at 35 mph (congested threshold speed per Caltrans and MTC) and the actual speed that was observed in the travel time survey and 2) multiplying the difference in time estimated by the number of lanes, capacity and the assume congestion duration of 2 hours. The estimated total vehicle hours of delay on the LOS F freeway segments during the evening peak period is 12,551 hours.

Table 4
Level of Service "F" Segments, P.M. Peak Period

CMP Route	Segment Limits		Jurisdiction	Length (miles)	Prior "F" (Years)	Veh. Hrs. of Delay	Comments	LOS Results		Run details
	From	To						2006	2008	
1 I-80 - EB	Toll Plaza	I-580 SB Merge	Oak	1.15	93-02,06	97		F(30) 25.7	F(30) 28.6	Tue 2/19 4:54 Tue 3/18 4:20 Thu 6/12 4:03
2 I-80 - EB	I-80/I-580 (Merge)	Powell	Emery-Berk	0.79	91-95, 97-06	855	Grandfathered	New	F(20) 11.1	Tue 2/19 4:54 Tue 4/8 4:19 Tue 3/18 4:20 Thu 6/12 4:03
3 I-80 - EB	Powell	Ashby	Emery-Berk	0.67	91-95, 97-06	1195	Grandfathered	New	F(20) 10.4	Same as above
4 I-80 - EB	Ashby	University	Emery-Berk	1.34	91-95, 97-06	314	Grandfathered	New	F(20) 25.5	Same as above
5 I-80 - EB	Jct I-580 (off)	Central (on)	Berk - Alb	1.12	91-92, 96-97,02,06	175	Grandfathered	New	F(30) 26.7	Same as above
6 I-80 - WB	Ashby	Powell	Emery-Berk	0.64	91-92, 94-06	426	Grandfathered	New	F(20) 18.6	Tue 2/19 4:40 Tue 3/18 4:08 Thu 6/12 4:47
7 I-238- WB	I-580	I-880	Uninc-San L	1.60	97-'06	165			F(20) 14.4 F(30) 24.8	Thu 4/17 5:29 Tue 3/18 4:13 Tue 5/7 5:16
8 I-580- EB	San Ramon/Foothill	I-680	Uninc-Pleas	0.77		378	New LOS F	New	F(20) 17.7	Thu 3/6 4:11 Wed 4/16 4:00 Tue 6/11 4:33
9 I-580- EB	I-680	Hopyard	Plea	0.76	98-'02,06	816		New	F(20) 9.1	Same as above

CMP Route	Segment Limits		Jurisdiction	Length (miles)	Prior "F" (Years)	Veh. Hrs. of Delay	Comments	LOS Results		Run details
	From	To						2006	2008	
10 I-580- EB	Hopyard	Santa Rita	Plea	1.96	98-'02,06	2163		New	F(20) 12.7	Same as above
11 I-580- EB	Santa Rita	El Charro	Uninc-Pleas	1.24	02	129		New	F(30) 29.0	Same as above
12 I-580 - EB	I-80	I-980	Oak	1.24	91-'92	220	Grandfathered	New	F(30) 27.3	Wed 3/12 5:37 Wed 3/13 4:00 Thu 4/24 5:35 Tue 4/29 5:32
13 I-580 - EB	Harrison	Lakeshore	Oak	0.69		81	New LOS F	New	F(30) 28.4	Tue 4/29 5:32 Wed 4/30 4:28
14 I-680 - NB	Rt 262/ Mission	Durham Rd	Fre	1.34		392	New LOS F	New	F(20) 19.7	Tue 3/4 4:31 Thu 4/17 5:10 Tue 4/29 5:09 Wed 4/30 5:46
15 I-680 - NB	Durham Rd	Washington Blvd	Fre	1.54		195	New LOS F	New	F(30) 26.2	Same as above
16 I-880 - NB	Alv-Niles	Tennyson	Un Cty-Hay	2.65	00-02,06	678			F(30) 24.5	Wed 3/18 5:17 Tue 4/8 4:37 Thu 5/1 5:18 Thu 5/1 5:52
17 I-880 - SB	Hegenberger	SR 112/Davis	Oak - SL	1.69	91-'92	273	Grandfathered	New	F(30) 24.5	Thu 3/19 5:25 Tue 4/8 4:05 Tue 4/8 4:51 Thu 3/19 4:02
18 SR 13-SB	Redwood	Jct I-580 (EB Merge)	Oak	0.89		134	New LOS F	New	F(30) 21.9	Tue 3/11 4:54 Wed 3/12 4:36 Thu 4/10 4:21
19 SR 24-EB	Jct I-580 (on)	Broadway/S R 13	Oak	2.08	91-'97,02,06	384	Grandfathered	New	F(20) 25.6	Thu 3/20 4:01 Wed 3/19 5:36 Thu 5/20 4:04 Tue 6/10 4:52 Thu 5/20 4:46

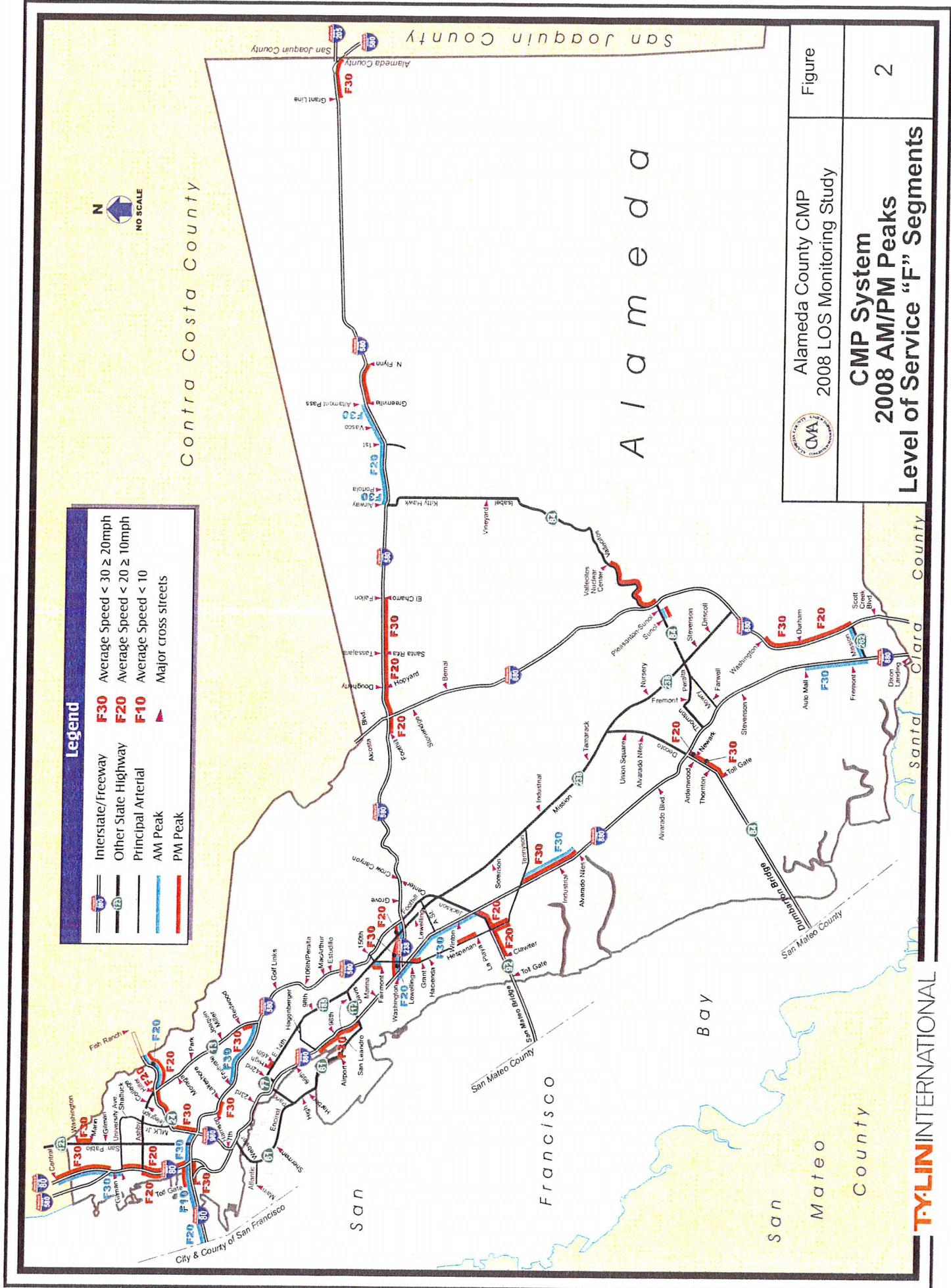
CMP Route	Segment Limits		Jurisdiction	Length (miles)	Prior "F" (Years)	Veh. Hrs. of Delay	Comments	LOS Results		Run details
	From	To						2006	2008	
20 SR 24-EB	Broadway/ SR 13	Caldecott (enter)	Oak	1.41	'91-'97, '02, '06	759	Grandfathered	New	F(20) 16.9	Same as above
21 SR 84-EB	Thornton Ave/Paseo Padre	Newark Blvd/Arden wood Blvd	Newark	1.23		173	New LOS F	New	F(30) 25.5	Tue 3/18 4:29 Wed 3/19 4:07 Wed 4/9 4:42
22 SR 84-EB	Newark Blvd/Arden wood Blvd	I-880 NB (off)	Newark	0.97		445	New LOS F	New	F(20) 15.8	Same as above
23 SR 92-EB	Clawiter	I-880	Hay	2.10	91-'92, '94-'95, '97-'02, '06	1848	Grandfathered	F(20) 16.7	F(20) 10.5	Thu 3/6 5:17 Thu 3/13 5:42 Wed 4/16 5:44
24 Hesperian - NB	Tennyson	SH 92 - WB	Hay	0.47	06				F 8.6	Thu 4/17 5:28 Wed 3/12 5:02 Wed 4/9 4:08
25 Hesperian - NB	La Playa	W.Winton Ave.	Hay	0.44	92		Grandfathered	New	F 5.2	Thu 3/13 4:08 Wed 4/9 5:17
26 Hesperian - NB	Grant	Llewelling	Unin	0.28	00,04,06			F 8.8	F 8.6	Thu 3/13 5:20 Thu 4/10 4:37
27 Hesperian - SB	14th	Fairmont	SL	0.31	'91, '95, '97		Grandfathered	E 13.0	F 8.6	Wed 3/12 4:27 Thu 3/13 4:39 Wed 4/9 5:56
28 Hesperian - SB	SH 92 - WB	Tennyson	Hay	0.47			New LOS F	E 13.6	F 9.7	Wed 3/12 4:44 Thu 3/13 4:58 Thu 4/10 4:15
29 SR 84-EB	Sunol Rd	Plea-Sunol Rd	Fre	0.50			New LOS F	New	F 5.2	Wed 4/30 5:51 Thu 3/6 4:14 Thu 3/6 5:49
										Wed 3/19 5:01 Wed 3/19 5:53

CMP Route	Segment Limits		Jurisdiction	Length (miles)	Prior "F" (Years)	Veh. Hrs. of Delay	Comments	LOS Results		Run details
	From	To						2006	2008	
30 SR 84 - EB	SR 84 (Off)/I-680	Vallecitos Ent.	Unin	2.21	02-04,06		New	F 23.6	Thu 3/6 4:14 Thu 3/6 5:49	Wed 4/16 4:21 Tue 4/29 5:53
31 SR 123 San Pablo - NB	Marin	Washington	Alb	0.45			New LOS F	D 11.5	Tue 3/4 5:16 Wed 3/5 5:06	Wed 3/5 4:17 Wed 3/19 4:12
32 SR 185 (Int'l) - NB	46th St	42 nd	Oak	0.26			New LOS F	New 7.3	Wed 3/19 4:55 Wed 3/12 4:44	Wed 3/19 5:56 Thu 3/19 4:11
33 SR13/SR 24 Interchang e	SR-13 NB	SR-24 EB	Oak	0.32	92-'04	187	Grandfathered	F 11.6	Tue 6/10 5:09 Thu 5/20 5:24	Tue 6/10 5:21 Tue 6/11 4:22
34 I-580/I-680 Interchang e	I-580 WB	I-680 SB	Pleas	0.66			New LOS F	C 30.4	F 6.2	Tue 6/10 5:44 Tue 6/10 5:12
35 I-880/SR 260 Connection	SR-260 EB	I-880 NB	Oak	0.36	98			E 19.4	F 14.1	Wed 3/5 4:10 Wed 3/6 4:19
										Tue 6/10 4:17 Thu 6/12 4:02

Note: Vehicle Hours of delay estimation assumes a congested speed of 35 mph or less and freeway lane capacity of 2,200 vph
 consistent with Caltrans' and MTC's assumptions.

New LOS F - The CMP segment is functioning at LOS F for the first time.

New – New CMP segments adopted in the 2007 CMP by splitting the longer CMP segments into shorter ones.



LOS "F" Segments Included in 1991 CMP Baseline ("Grandfathered") – P.M. Peak

The remaining 13 segments operating at LOS "F" during the 2008 P.M. peak period were also at LOS "F" during the 1991 CMP baseline year and are therefore grandfathered. The details are shown below:

CMP Route	Segment Limits	Jurisdiction
1 I 80 - EB	I-80/I-580 merge to Powell	Emeryville/Berkeley
2 I 80 - EB	Powell to Ashby	Emeryville/Berkeley
3 I 80 – EB	Ashby to University	Emeryville/Berkeley
4 I 80 – EB	Jct I-580 (Off) to Central (On)	Berkeley/Albany
5 I 80 – WB	Ashby to Powell	Emeryville to Berkeley
6 I 580 – EB	I-80 to I-980	Oakland
7 I 880 – SB	Hegerberger to SR 112/Davis	Oakland/San Leandro
8 SR 24 – EB	Jct I-580 (On) to Broadway/SR 13	Oakland
9 SR 24 – EB	Broadway/SR 13 to Caldecott (Enter)	Oakland
10 SR 92 – EB	Clawitter to I-880	Hayward
11 Hesperian – NB	Tennyson to SR 92 – WB	Hayward
12 Hesperian – SB	14 th to Fairmont	San Leandro
13 SR 13/SR 24 Interchange	SR 13 – NB to SR 24 – EB	Oakland

Improved Segments – P.M. Peak

Thirteen segments that were operating at LOS F in the 2006 surveys have improved in 2008. The segments are listed below. In 2006 LOS Monitoring study, there were 7 P.M. peak period segments that improved from LOS "F" conditions.

Segments that were previously designated as LOS "F" in 2006, but have improved in the 2008 surveys (13 locations).

	CMP Route	Direction	Segment Limits		2006 LOS (Speed)	2008 LOS (Speed)	Prior LOS F
			From	To			
P.M. PEAK PERIOD							
1.	I-80	EB	SF County Line	Toll Plaza	F(30) (24.2)	C (54.2)	06
2.	I-80	WB	I-580 Split	Toll Plaza	F(20) (18.5)	E (40.4)	91-93,97- 00,04-06
3.	I-238	EB	I-880	I-580	F(20) (19.2)	D (41.7)	91-92,94,96- 97,02,06
4.	I-580	WB	SH 24 On-Ramp	I-80/I-580 Split	F(30) (24.2)	B (56.5)	06
5.	I 880	SB	I-980	23 rd	F(30) (24.3)	C (50.1)	06
6.	I-880	SB	High/42 nd	Hegenberger	F(30) (24.3)	E (38.5)	06
7.	I-880	SB	SR 262/Mission	Dix Landing (off)	F(30) (28.8)	A (61.1)	92,06
8.	SR 13	NB	Moraga Ave.	Hiller (Sig)	F(30) (20.1)	E (40.7)	06
9.	SR 84	EB	Toll Plaza	Thornton	F(30) (28.3)	E (37.6)	06
10	Tennyson	EB	Hesperian	I-880	F (11.5)	E(14.2)	06
11	Decoto	WB	SH 238/Mission	Union Square	F(8.7)	E(10.5)	91- 94,96,98,00-06
12	SR 123 San Pablo	NB	Allston	University	F(5.7)	E(8.8)	98,00,06
13	I-580/SR 24 Interchange		SR 24 WB	I-580 EB	F (18.5)	B(43.9)	06

AM PEAK PERIOD RESULTS

Based on the direction of the CMA Board in 2004, all of the segments are being monitored for afternoon and morning peak periods starting 2006. Previously (since 1994), the A.M. peak data was collected only for selected segments that were considered to be the most critical freeway segments during the morning commute peak hours. Between 1994 and 2000, 23 A.M. peak period segments were studied. The number of segments increased to 45 in 2004 and to 287 in 2006. By splitting the longer CMP segments into shorter segments, the number of segments increased to 372 in 2008. The study methodology is the same as for the P.M. studies.

The results of the A.M. peak period studies are not used to determine CMP conformity findings, but only to provide supplemental information for use by the CMA and as input for the Countywide Travel Demand Model. The results of these surveys are shown in Figure 2 and Table 5 and are included in the Appendix from pages A-14 through A-26.

Level of Service “F” Segments – A.M. Peak

There are 15 freeway segments, 3 arterial segments and 2 freeway to freeway connectors that are operating at LOS F. Of these 20 LOS F segments, 7 are new segments created by splitting the longer CMP roadway segments. There are 5 CMP segments operating at LOS F for the first time, of which 3 are on newly created segments.

	CMP Route	Segment Limits	Jurisdiction	Comments
<i>Freeways and Ramps</i>				
1	I-80 – WB	Central to JCT I-580	Berkeley/Albany	New Segment
2	I-80 – WB	JCT I-580 to University	Berkeley/Albany	New Segment
3	I-80- WB	I-580 Split to Toll Plaza	Oakland	
4	I-80 – WB	Toll Plaza to SF County line	Oakland	
5	I-238 - WB	I-580 to I-880	Alameda County/ San Leandro	
6	I-580-WB	Greenville Rd./ 1 st St.	Alameda County/Livermore	New Segment/ New LOS F
7	I-580 - WB	1 st St. to Portola Ave.	Livermore	
8	I-580 - WB	Portola to SR 84/Airway Blvd.	Livermore/Pleasanton	New Segment/ New LOS F
9	I-580 - WB	SH 13 Off to Fruitvale	Oakland	
10	I-580 – WB	SR 24 On Ramp to I-80/580 Split	Oakland	
11	I-880- NB	Alvarado Niles to Tennyson	Union City/Hayward	
12	I-880 – SB	I-238 to A St.	San Leandro/Alameda County	
13	I-880 - NB	A St. to SR 92	Hayward	
14	I-880 SB	Auto Mall Pkwy to SR 262/Mission	Fremont	New Segment
15	SR 24 – EB	Broadway/SR 13 to Caldecott Enter	Oakland	New Segment
16	SR 13/SR 24 Interchange	SR 13 NB to SR 24 EB	Oakland	
17	I-880/SR 260 Connection	SR 260 EB to I-880 NB	Oakland	
<i>Arterial</i>				
18	Hesperian – SB	14th to Fairmont	San Leandro	
19	SR 84 (Fremont) EB	Sunol Rd to Pleasanton-Sunol Rd	Fremont	New Segment and New LOS F
20	SR 262 (Mission) –WB	I-680 NB to I-880 SB	Fremont	

Improved Segments – A.M. Peak

Two segments that were operating at LOS F in 2006 have improved. The segments are listed below:

Segments that were previously designated as LOS “F” in 2006, but have improved in the 2008 surveys

	CMP Route	Direction	Segment Limits		2006 LOS (Speed)	2008 LOS (Speed)	Prior LOS F
			From	To			
1	SR 84	WB	I-205 (SJ Co)	Peralta	F (9.7)	D(14.7)	06
2	SR 13	NB	Carson/Redwood	Joaquin Miller	F(20) 17.3	E (34.4)	06

Vehicle Hours of Delay (VHD) estimation for LOS F freeway segments

Similar to the P.M peak period LOS F segments, vehicle hours of delay (VHD) was estimated for the freeway segments operating at LOS F during the A.M. peak period. The VHD information is shown in Table-5. The total vehicle hours of delay on the LOS F freeway segments during the morning peak period is 13,234 hours.

CMP Route	Segment Limits		Jurisdiction	Length (miles)	Prior LOS F	Veh. Hrs of Delay	LOS Results		Run details
	From	To					Comments	2006	2008
10 I-580 - WB	SH-24 On-ramp	I-80/580 Split	Oak	0.69	02,06	300	F(30) 25.8	F(30) 20.7	Same as above
11 I-880 - NB	Alv-Niles	Tennyson	Un Cty - Hay	2.65	06	448	F(30) 24.3	F(30) 26.2	Wed 3/19 8:49 Thu 3/20 7:21 Thu 3/20 7:50 Tue 4/8 7:31 Tue 4/8 8:27 Wed 6/11 8:20
12 I-880 - SB	I-238 (Marina before 06)		A St	SL-Uninc	2.03	06	462	F(30) 27.3	Tue 3/18 7:04 Tue 3/18 8:03 Wed 3/19 7:05 Tue 4/8 7:06 Tue 4/8 7:46 Thu 5/22 8:43 Wed 6/11 7:36 Tue 6/10 8:21
13 I-880 - SB	A St	Rt 92	Hay	1.81	97,98,00-02	217	E 32	F(30) 29.4	Same as above
14 I-880 - SB	Auto Mall Pkwy	Rt 262/Mission	Fre	3.04	04,06	708	New	F(30) 22.0	Tue 3/18 7:20 Tue 3/18 7:44 Tue 4/8 7:07 Tue 4/8 7:52 Wed 5/21 8:01 Thu 5/8 8:06
15 SR 24 - EB	Broadway/SR 13	Caldecott (enter)	Oak	1.41	02,06	924	New	F(30) 15.2	Thu 5/8 7:16 Tue 4/8 8:45 Thu 3/20 8:45 Wed 5/20 8:54 Wed 5/20 8:22 Thu 6/5 8:31
16 Hesperian - SB	14th	Fairmont	SL	0.31			New LOS F	D 16.8	Tue 3/11 8:04 Wed 3/12 7:02 Wed 3/12 8:01 Tue 4/8 8:40 Thu 4/17 7:34 Wed 4/9 7:33 Wed 4/9 8:38
17 SR 84 - EB	Sunol Rd	Plea-Sunol Rd	Fre	0.50			New LOS F	New F 5.5	Thu 3/20 7:15 Thu 3/20 8:04 Wed 4/16 7:55 Thu 4/17 8:37 Thu 3/20 8:56 Tue 4/16 8:20
18 SR 262 (Mission) - WB	I-680 NB	I-880 SB	Fre	1.11	06			F 11.4	Wed 3/5 7:01 Tue 4/22 8:28 Tue 4/22 8:04 Tue 4/29 8:51 Tue 4/22 8:49 Tue 4/22 8:27 Wed 4/30 8:08

CMP Route	Segment Limits		Jurisdiction	Length (miles)	Prior LOS F	Veh. Hrs of Delay	Comments		Run details	
	From	To					2006	2008	2006	2008
19 SR13/SR 24 Interchange**	SR-13 NB	SR-24 EB	Oak	0.32	06	187	F 5.3	F 6.2	Thu 5/22 7:25	Thu 5/22 7:48
20 I-880/SR 260 Connection**	SR-260 EB	I-880 NB	Oak	0.36	06		F 10.5	F 12.6	Tue 6/10 8:38	Thu 5/22 7:40

Note: Vehicle Hours of delay estimation assumes a congested speed of 35 mph or less and freeway lane capacity of 2,200 vph per hour consistent with Caltrans' and MTC's assumptions.

New LOS F - The CMP segment is functioning at LOS F for the first time.

New – New CMP segments adopted in the 2007 CMP by splitting the longer CMP segments into shorter ones.